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[54] **HYBRID NEURAL NETWORK FOR PATTERN RECOGNITION**

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[52] **U.S. Cl.** **382/159**; 382/158

[58] **Field of Search** 382/155, 187, 382/158, 157, 159; 395/23; 365/49; 706/16, 25, 29, 33, 46

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[57] **ABSTRACT**

A system and a method for recognizing patterns comprises a first stage for extracting features from inputted patterns and for providing topological representations of the characteristics of the inputted patterns and a second stage for classifying and recognizing the inputted patterns. The first stage comprises two one-layer neural networks and the second stage comprises a feedforward two-layer neural network. Supplying signals representative of a set of inputted patterns to the input layers of the first and second neural networks, training the first and second neural networks using a competitive learning algorithm, and generating topological representations of the input patterns using the first and second neural networks The method further comprises providing a third neural network for classifying and recognizing the inputted patterns and training the third neural network with a back-propagation algorithm so that the third neural network recognizes at least one interested pattern.

13 Claims, 2 Drawing Sheets